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IT WAS AN EXCEPTIONAL YEAR, DESPITE RESTRICTIONS

Though 2020 was dominated by events surrounding the COVID pandemic — whether it was adapting to social distancing and the need to telecommute, safeguarding employees as they returned to conduct mission-essential work or engaging in COVID-related research — the Laboratory managed an exceptional year in all facets of S&T and operations. The Lab delivered on all missions despite the pandemic and its restrictions.

The year was marked by myriad advances in high performance computing as the Lab moved closer to making El Capitan and exascale computing a reality.

Lab researchers completed assembly and qualification of 16 prototype high-voltage, solid state pulsed-power drivers to meet the delivery schedule for the Scorpius radiography project. Scorpius is a multi-lab partnership to support the national effort to modernize the U.S. nuclear stockpile.

The Lab also passed its first program-level key milestone in the W87-1 Modification Program, keeping the program on schedule despite work stoppages due to the COVID-19 pandemic.

At the National Ignition Facility, researchers developed an experimental capability for measuring the basic properties of matter, such as equation of state, at the highest pressures thus far achieved in a controlled laboratory experiment. Researchers also produced nearly round inertial confinement fusion implosions and more laser-induced energy absorption by the fuel-filled capsule.

LLNL scientists released “Getting to Neutral: Options for Negative Carbon Emissions in California,” identifying a robust suite of technologies to help California clear the last hurdle and become carbon neutral — and ultimately carbon negative — by 2045.

Lab engineers and biologists developed a “brain-on-a-chip” device capable of recording the neural activity of living brain cell cultures in three dimensions, a significant advancement in the realistic modeling of the human brain outside of the body. Scientists paired 3D-printed, living human brain vasculature with advanced computational flow simulations to better understand tumor cell attachment to blood vessels and developed the first living 3D-printed aneurysm to improve surgical procedures and personalize treatments.

OPERATIONS

The Lab broke ground on new facilities, such as the Emergency Operations Center and the Exascale Computing Facility Modernization project, while dedicating buildings such as the Applied Materials and Engineering campus.

The Laboratory kicked off efforts to comply with new regulations regarding the use of personal cell phones and other electronic devices, created a successful virtual internship program for summer students and began working with its new supplemental labor provider, North Wind Services.

INSIDE YEAR IN REVIEW

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Masks are heat treated inside a self-sealing autoclave pouch (background) to prevent dispersion of viral particles from airflow inside the oven.

In this edition, *Newsline* looks back at 2020 with a month-by-month sampling of events and accomplishments in three categories: science and technology, people and operations.

RESPONDING TO COVID

When the COVID pandemic hit in March, the Lab quickly responded, furnishing equipment and resources so the workforce could continue to work from home. The Lab also established safety protocols for workforce members called back in April, and set up a hotline and website to answer employee questions regarding COVID-19.

Lab researchers developed a preliminary set of predictive 3D protein structures of the virus to aid research efforts to combat the disease. The Lab's high performance computing resources were made available in the work to help discover candidates for new antibodies and pharmaceutical drugs to combat the disease.

An LLNL team quickly developed a simple ventilator design for quick and easy assembly from available parts, designed to meet the functional requirements of COVID-19 patients. In June, LLNL partnered with private industry to mass-produce the ventilator, which has been authorized for emergency use by the Food and Drug Administration.

Lab engineers formed a rapid response team to test more than a dozen novel, 3D-printed nasal swab designs and studied ways to safely and rapidly remove viral threats from N95 respirators, without compromising the device's fit and its ability to filter airborne particles, so they can be reused.

This is just a very small sampling of the Lab's accomplishments in 2020. For a more comprehensive look back at the year, please see the month-by-month look back at 2020.

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YEAR in REVIEW

A MONTH-BY-MONTH RECAP

3D-printed electrodes boost charge rate and capacity of electrical storage devices.

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JANUARY 2020

SCIENCE AND TECHNOLOGY

A new radiation-effects diagnostic triples the number of material samples that can be exposed to X-rays in a single National Ignition Facility shot.
Read more

Researchers at LLNL, in collaboration with colleagues from the University of Leeds and Imperial College London, find that the latest generation of global climate models predict more warming in response to increasing carbon dioxide than their predecessors.
Read more

LLNL's Space Science and Security Program has a banner month as the program sends the Lab's first in-house designed and fabricated CubeSat into orbit.
Read more

If copper was found in the core of Saturn it would have the same crystalline structure as the copper pipes found in many homes, according to new research from LLNL and Johns Hopkins University. The research team reveals that copper maintains its crystalline structure at pressures ranging from one atmosphere (room pressure) to more than 30 million atmospheres.
Read more

An LLNL scientist and international collaborators date micrometer-sized silicon carbide stardust grains extracted from the Murchison meteorite and find they were formed anywhere from 1.5 million to 3 billion years before the formation of our solar system.
Read more

An LLNL team proves that nanocarbon can be synthesized by applying strong shocks to an organic material, and at the same time provides insights into the physicochemical mechanisms controlling nanocarbon condensation at extreme conditions in a chemically reactive environment.
Read more

A team of LLNL scientists and collaborators develop a new class of aerogel electrodes with a simultaneous boost in energy and power density. The research could be a boon for the energy storage industry.
Read more

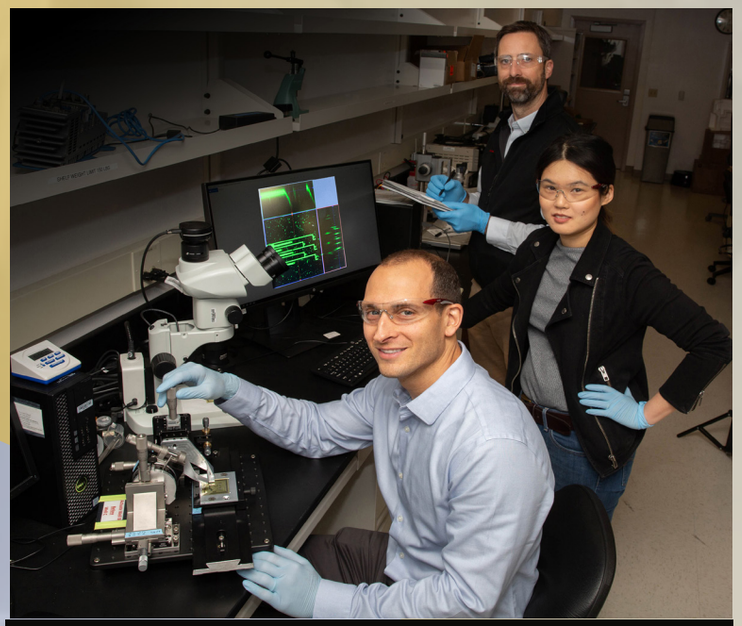
LLNL scientists identify a robust suite of technologies to help California clear the last hurdle and become carbon neutral — and ultimately carbon negative — by 2045. The report is titled, "Getting to Neutral: Options for Negative Carbon Emissions in California."
Read more

PEOPLE

Former Secretary of Energy Rick Perry recognizes LLNL staff with six Secretary's Honor Awards at a ceremony at Department of Energy headquarters.
Read more

Luisa Hansen is not one to sit still or be idle. Having worked at LLNL for the past 60 years (joining just seven years after the Lab opened), she can still be seen going from one meeting to another and attending Lab events. Hansen, a nuclear physicist, enjoys her job and has no immediate plans to retire.
Read more

Harrison "Jack" Schmitt, the only geologist to be sent to the moon as part of the Apollo missions, presents a brief history of the moon based on research completed on rocks he collected on the lunar surface during the Apollo 17 mission.
Read more



A team of Lawrence Livermore National Laboratory engineers and biologists — including, from left, David Soscia, Nick Fischer and Doris Lam — developed a "brain-on-a-chip" device capable of recording the neural activity of living brain cell cultures in 3D, a significant advancement in modeling the human brain outside of the body.

'Each day of recording on the 3D-engineered platform was an exciting feat to show that the human neurons were surviving, growing and developing in our tissue-like micro-environment.'

– Biologist Doris Lam

The Department of Energy announces that LLNL engineer Andréa Schmidt is selected as a member and fellow of the Oppenheimer Science and Energy Leadership Program's fourth cohort.
Read more

OPERATIONS

Representatives from the Environmental Protection Agency present a team of LLNL employees with a Federal Green Challenge award at a ceremony.
Read more

LLNL's popular lecture series, "Science on Saturday," returns to the Bankhead Theater in Livermore.
Read more

Personally owned mobile devices must be removed from all limited areas within buildings. Areas where personally owned mobile devices are prohibited will be marked with signs.
Read more

Security clearance background investigations for Lab employees are conducted by the Defense Counterintelligence and Security Agency. The National Background Investigations Bureau is successfully transferred from the U.S. Office of Personnel Management to the Department of Defense.
Read more

Leaders in LLNL's Engineering Directorate hold the first of what will be many employee forums to address current challenges in the directorate's culture and to brainstorm ideas on developing best practices in the coming years.
Read more

A group of American Indian middle and high school students visit the Laboratory through the Intertribal Friendship House, Soaring Eagles pilot project. The goal of the visit is to educate students about science and technology at the Laboratory.
Read more

FEBRUARY 2020

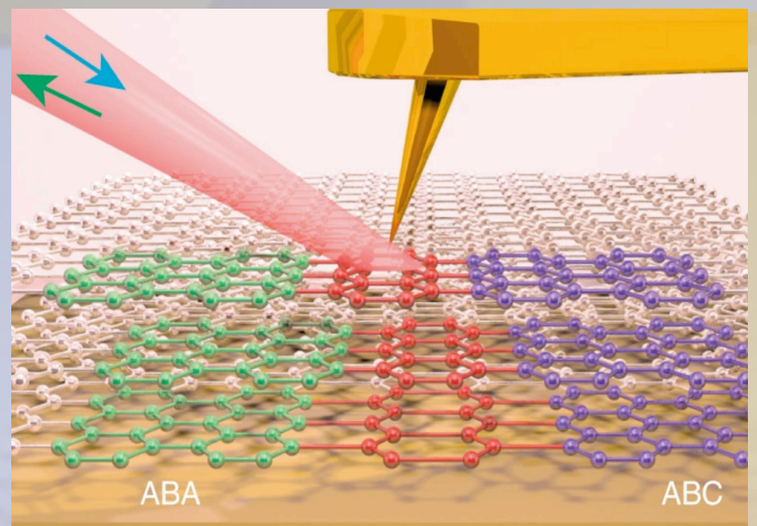
SCIENCE AND TECHNOLOGY

As global concern continues to rise about a novel coronavirus spreading from China, a team of LLNL researchers develops a preliminary set of predictive 3D protein structures of the virus to aid research efforts to combat the disease.
Read more

Computer scientists at LLNL prepare for the potential future by applying deep reinforcement learning — the same kind of goal-driven algorithms that have defeated video game experts and world champions in the strategy game Go — to determine the most efficient strategy for charging and driving electric vehicles used for ride-hailing services.
Read more

LLNL engineers and biologists develop a "brain-on-a-chip" device capable of recording the neural activity of living brain cell cultures in three dimensions, a significant advancement in the realistic modeling of the human brain outside of the body.
Read more

An LLNL scientist and international collaborators develop a framework for testing nutrient limitations and a benchmark of nitrogen and phosphorus limitation for models to be used for predictions of the terrestrial carbon sink.
Read more



Livermore's Joel Berry has coauthored a pair of papers describing promising methods for controlling the structure and properties of 2D materials.

'In the beginning, we were sort of stuck as we really needed higher laser intensities. The venture paid off beautifully. The CPCs enabled us to make a substantial number of positrons on ARC right away. More importantly, the success inspired other users to use it for various applications.'

– Physicist Hui Chen

Using ultra-bright X-ray flashes, an LLNL scientist and international collaborators track down a potential target for new drugs against sleeping sickness.
Read more

A multi-institutional research team that includes LLNL's Susan Zimmerman finds that tropical glaciers in Africa and South America began their retreat simultaneously at the end of the last ice age about 20,000 years ago.
Read more

For the first time, LLNL scientists and collaborators observe the shock melting and refreezing of a metal (zirconium) at the picosecond scale (trillionths of a second).
Read more

LLNL scientists employ compound parabolic targets to achieve relativistic effects associated with significantly greater laser intensities. This innovation is substantially expanding the experimental capabilities of the National Ignition Facility's Advanced Radiographic Capability laser.
Read more

PEOPLE

LLNL's Joel Berry coauthors a pair of papers describing promising methods for controlling the structure and properties of two-dimensional materials.
Read more

Kim Budil, principal associate director for Weapons and Complex Integration at LLNL, is one of 36 scientists and engineers featured in a new book titled, "Find Your Path: Unconventional Lessons from 36 Leading Scientists and Engineers."
Read more

Audrey Williams, a chemist who is the director of LLNL's Forensic Science Center, is the recipient of the 2020 "Outstanding Early Career Achievement in Forensic Science Award."
Read more

Huban Gowadia, a longtime manager in national security programs for multiple government agencies, is selected as the principal associate director of Global Security at LLNL.
Read more

Lisa Woodrow, a longtime manager at LLNL, is named associate director of the Lab's Environment, Safety & Health program.
Read more

A team of computer scientists and mathematicians from LLNL outdo more than two dozen teams to place first overall in Challenge 1 of the Department of Energy's Grid Optimization Competition, an ongoing series of contests aimed at developing a more reliable, resilient and secure U.S. electrical grid and solving complex grid problems.
Read more

LLNL physicist Natalie Hell is awarded the 2020 Dissertation Prize from the Laboratory Astrophysics Division of the American Astronomical Society.
Read more

OPERATIONS

Officials from the National Nuclear Security Administration and LLNL gather with elected leaders and industry professionals to dedicate and tour the Advanced Manufacturing Laboratory, a new collaborative hub intended to spur public-private partnerships.
Read more

LLESA introduces its new fitness satellite gym, located near Lake Hausmann.
Read more

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LAB RESPONDS TO COVID-19

It takes more than a pandemic to shut down the Laboratory. When a shelter in place was ordered throughout the Bay Area in March, most of the Laboratory workforce was sent home, initially to do some training, catch up on email and journal reading and a host of other assignments. But when it became clear the end date for this “quarantine” would be continuously extended, many Lab teams acted quickly to ensure employees had the necessary resources to continue to do their jobs.

The Chief Financial Officer’s Office quickly clarified timekeeping protocols and established guidelines for charging authorized leave vs. personal time. Strategic Human Resources provided policy information, changes or exemptions to allow for more leave options. LivIT worked around the clock to secure laptops, VPN tokens and other devices to give employee access to their desktops and files to enable long-term telecommuting. ES&H provided ergonomic assistance for those working from home, while Supply Chain Management stepped up orders for various equipment employees would need.

As several PADs began steps to ensure mission-essential work could continue, ES&H staff and Operations & Business personnel established protocols to ensure a COVID-safe environment. Face coverings and hand sanitizer were ordered by the truckload. Health Services worked to establish a hotline to answer employee questions and provide guidance for those who tested positive for COVID or those who suspected they may have been exposed. And a website was quickly developed to provide resources and answers to frequently asked questions.

Citing another strong year of performance, including the second-best score ever, Director Bill Goldstein announces distribution of the Laboratory’s Variable Compensation Plan to all eligible employees.
Read more

The Laboratory’s ability to “get the job done” earns another round of high marks in the FY19 Performance Evaluation Report. The Laboratory earns ratings of excellent in all four science and technology goals, with ratings of very good for operations and leadership.
Read more

MARCH 2020

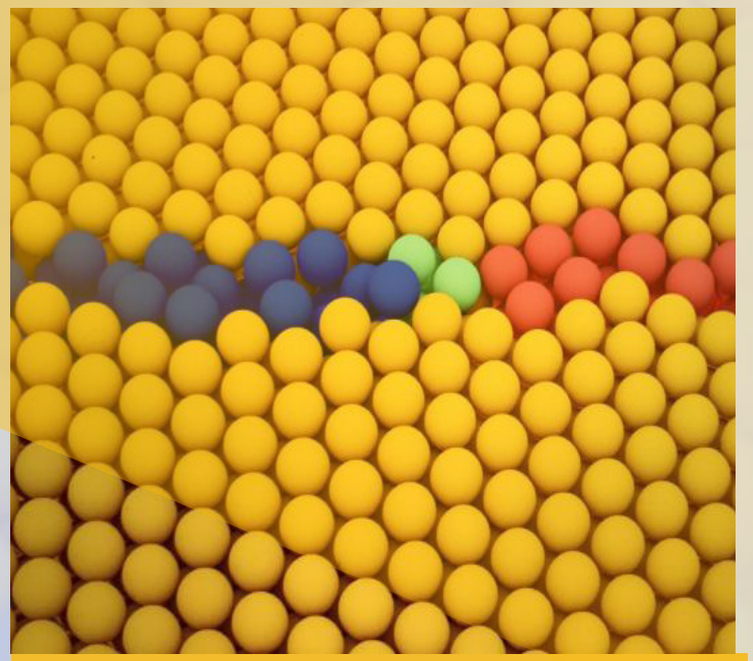
SCIENCE & TECHNOLOGY

A multi-institutional collaboration including climate scientist Celine Bonfils explores the current understanding of the physical processes that can drive flash droughts, the existing capabilities to predict them and what is needed to make progress to establish effective early warning of flash droughts.
Read more

An interdisciplinary team of LLNL researchers from the Physical and Life Sciences, Computing and Engineering directorates develop machine-learning techniques to remove bottlenecks in the development cycle, and in turn dramatically decrease time to deployment.
Read more

LLNL, Hewlett Packard Enterprise and Advanced Micro Devices Inc. announce the selection of AMD as the node supplier for El Capitan, projected to be the world’s most powerful supercomputer when it is fully deployed in 2023.
Read more

LLNL and Argon Electronics (UK) Ltd. reach a Cooperative Research and Development Agreement that will facilitate



Coexistence of different grain boundary phases observed by high-resolution transmission electron microscopy.

'My parents taught me to be curious, seek answers and be a free thinker. They were keen to point out that students were often taught the 'what' for exam performance, but not encouraged to ask 'why.' '

– Scientist Joe Morris

the development of an ultra-realistic radiation simulator tool for first responders.
Read more

LLNL and its partner laboratories and universities design and build an extensive suite of more than a dozen nuclear diagnostics, with more on the way.
Read more

With advances by scientists at LLNL and other institutions, researchers move closer to the day when they can deploy technology to remotely monitor subatomic particles from nuclear power plants at long distances.
Read more

The High Performance Computing for Energy Innovation (HPC4EI) Program managed by LLNL issues a special solicitation seeking industry partners to collaborate with the DOE's national laboratories on projects to improve manufacturing processes.
Read more

To improve the understanding of how defects, called grain boundaries, create stronger and more durable materials, a team of scientists from LLNL and Max-Planck-Institut für Eisenforschung for the first time observe how they transition from one form to another in an elemental metal.
Read more

LLNL biologists find that manipulating the gut microbiome with antibiotics alters the uptake and effectiveness of acetaminophen.
Read more

Planetary defense researchers at LLNL validate their ability to accurately simulate how they might deflect an Earth-bound asteroid.
Read more

LLNL scientists and collaborators look at how much carbonyl sulfide comes from forest fires and other burning biomass, as opposed to other sources.
Read more

LLNL scientists verify the National Ignition Facility's Advanced Radiographic Capability laser can accelerate electrons to relativistic energy levels previously expected only from higher-intensity lasers.
Read more

COVID-19 researchers worldwide fight to stop the virus using the world's most powerful high performance computer resources that can significantly advance to pace of scientific discovery.
Read more

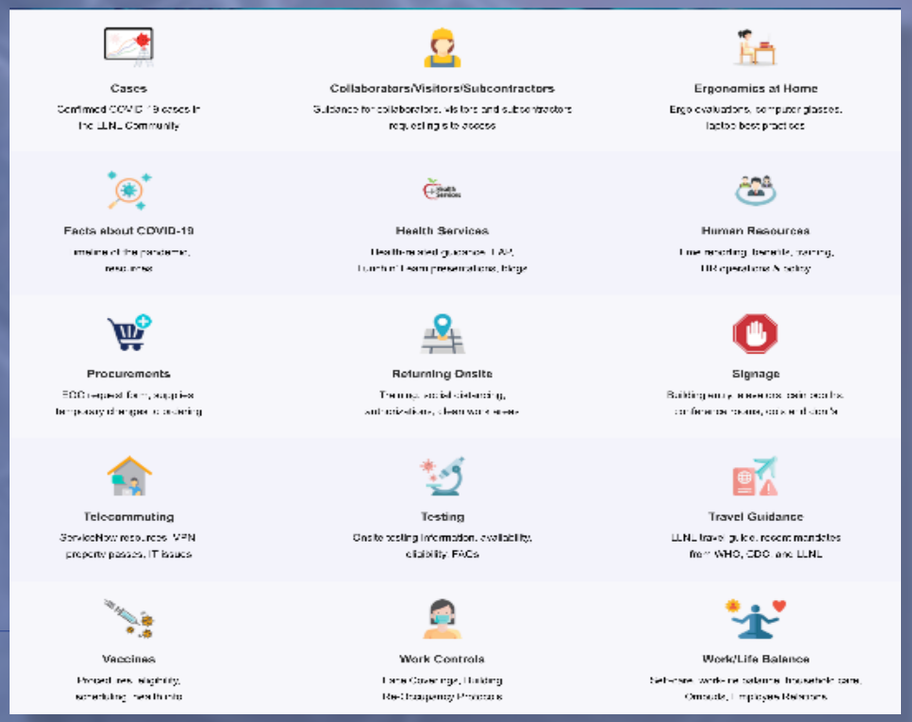
LLNL scientists contribute to the global fight against COVID-19 by combining artificial intelligence/ machine learning, bioinformatics and supercomputing to help discover candidates for new antibodies and pharmaceutical drugs to combat the disease.
Read more

Using synchrotron X-ray diffraction and Raman spectroscopy diagnostics in concert with first principles calculations, an LLNL team and collaborators discover that it is possible to create stable xenon iron/nickel intermetallic compounds at Earth-core thermodynamic conditions. The experimental team uses a natural iron meteorite, which fell on the Sikhote-Alin mountains in

Creating a COVID-safe environment

As the Laboratory began returning to on-site work, there was one overarching priority: protecting the health and safety of the workforce.

All returning employees are required to take a training course on how to work safely during the COVID-19 pandemic. Once on-site, a Sitewide Work Control Document spells out the controls designed to protect employees from transmission in the workplace.



The COVID-19 research and response website.

Building occupancy is controlled to allow for proper distancing, and appropriate PPE is provided where distancing is not possible. Masks are required on-site, and important guidance is in place to protect employees in environments such as meetings and shared vehicles.

The Health Services Department (HSD) identifies, tracks and performs follow-up case management of employees who have been diagnosed with COVID-19 and institutes contact tracing to prevent on-site spread. A 24/7 employee hotline allows for rapid reporting and tracking, providing an important mechanism to quickly and efficiently track illness and answer employee concerns.

These measures, which have successfully safeguarded the on-site Lab population since the pandemic began, are the result of the efforts of the Institutional Biosafety Office, Health Services Department, the Environment, Safety & Health Directorate and the hard work and diligence of countless employees across the Laboratory.

Russia, as a proxy to Earth's core composition.
Read more

PEOPLE

Lucas Federle, an employee in the Operations & Business Directorate, earns an Eagle Eye Award.
Read more

LLNL's strength in conducting multidisciplinary research projects draws Joe Morris back to the Lab where he takes on the computational geosciences group lead position within the Physical & Life Sciences Directorate.
Read more

OPERATIONS

Department of Energy Secretary Dan Brouillette gives an update on the agency's response to COVID-19.
Read more

LLNL and The State Theatre in Modesto present "Science on Screen" two Saturdays a month in March and April. The 2020 theme delves into space.
Read more

In response to the growing impact of the COVID-19 pandemic, LLNL Director Bill Goldstein directs an orderly move to Minimum Safe Operations for the Laboratory. This move allows LLNL to comply with the various county shelter-in-place orders, state and federal government recommendations, and — most important — protects the health and safety of the Laboratory workforce.
Read more

Due to the COVID-19 pandemic, the processing of student hires at the Laboratory is suspended temporarily.
Read more

From left: Mechanical engineer Ken Enstrom and technicians Greg Norton and Aaron Sperry test and validate simple ventilator prototypes that could be assembled easily from readily available parts. The effort comes in response to a potential surge in demand for ventilators due to the COVID-19 pandemic.

'These are difficult times. Many in our community are experiencing extreme uncertainty and hardship through no fault of their own. We'll only get through by helping one another, while staying as safe as we each can.'

– Bill Goldstein, Laboratory director

LLNL, fully committed to helping protect the U.S. from COVID-19 and to speed the recovery of those affected, launches an informational COVID-19 research and response website.
Read more

Director Bill Goldstein announces the Lab will begin limited return to work for Reduced Mission-Critical Operations.
Read more

NNSA Administrator Lisa Gordon-Hagerty gives a message to LLNL employees amid the COVID-19 pandemic.
Read more

APRIL 2020

SCIENCE AND TECHNOLOGY

LLNL material scientists use an additive manufacturing technique, called cold-spray deposition, to create thermoelectric generators that can harvest waste heat from previously inaccessible sources, such as pipes with complex geometries. The generators display good performance over a wide temperature range.
Read more

LLNL scientists, in collaboration with University of California, Irvine, show that ion transport near a hydrophobic interface is dependent not only on applied voltage, but on the type of ion. The team finds that ion currents through single silicon nitride nanopores that contain a hydrophobic-hydrophilic junction can be highly dependent on the size and hydration strength of the solvated ions.
Read more

LLNL and its industry partners apply the nation's most powerful supercomputers and expertise in computational modeling and data science to battle COVID-19. The Laboratory, Penguin Computing and AMD reach an agreement to upgrade the Lab's unclassified, Penguin Computing-built Corona high performance computing cluster with an in-kind contribution of cutting-edge AMD Instinct accelerators, expected to nearly double the peak performance of the machine.
Read more

LLNL researchers Matt Lyman and Salustra Urbin collect and catalog samples taken from a B-29 crash site in 1950 in New Mexico.
Read more

An LLNL team works tirelessly to prototype a simple ventilator design for quick and easy assembly from available parts, designed to meet the functional requirements of COVID-19 patients.
Read more

LLNL scientists conduct research aimed at mitigating the impact of COVID-19, focusing on accelerating development of new therapeutics that can boost the body's ability to fight the virus.
Read more

PEOPLE

The American Astronomical Society (AAS) selects LLNL scientist Peter Beiersdorfer as a fellow in its inaugural class of this accolade.
Read more

Longtime LLNL climate scientist Karl Taylor receives the California Air Resources Board Haagen-Smit Clean Air Award for 2019, also known as the "Nobel Prize" of air pollution and climate science achievements.
Read more

U.S. Air Force Gen. John Gordon, who became the first administrator of the National Nuclear Security

The Lab offers a remote summer program allowing students the opportunity to carry out research projects by telecommuting from their current location.

'Your spirit and enthusiasm are truly what makes this community and what makes the NNSA family a special place at which to work.'

– DOE Under Secretary for Nuclear Security and NNSA Administrator Lisa Gordon-Hagerty

Administration following a long and distinguished career in the military, dies on April 19 in Columbia, Missouri.
Read more

OPERATIONS

Bay Area counties — including Alameda — extend their shelter-in-place orders to 11:59 p.m. May 3. The White House also extends the federal social distancing guidelines to April 30.
Read more

LLNL releases energy flow charts that indicate Americans used less energy in 2019 than in 2018.
Read more

Director Bill Goldstein thanks employees for balancing work and family/home responsibilities during stressful times due to the COVID-19 pandemic.
Read more

Limited work resumes on-site in support of specific mission-essential activities related to national security responsibilities, a posture referred to as "Reduced Mission-Critical Operations." This is in addition to the employees who have been on-site in support of both minimum safe and COVID-19-related projects and activities. Guidance is developed to help returning employees effectively practice social distancing, enhanced hygiene and other safety practices, and to keep population density low.
Read more

The Laboratory announces a shift from on-site to a remote summer program, allowing students the opportunity to carry out a research project by telecommuting from their current location if their original project can be modified for online work.
Read more

The Lab's policy on charging leave associated with the COVID-19 pandemic is changed, effective Monday, April 20. This change limits the ability of employees to use authorized leave to those whose work cannot be done via telecommuting.
Read more

Health Services launches the "Coping with COVID — Lunch and Learn" series to inform and support employees coping with COVID-19 related challenges and concerns.
Read more

LLNL develops a training course on how to work safely at the Lab during the COVID-19 pandemic. "Working Safely at LLNL During The COVID-19 Pandemic" is required for all employees coming on to the main site or Site 300. Those telecommuting also may take the course. Ultimately, it will be required for all personnel returning to work at the Laboratory.
Read more

DOE celebrates good work over the last 50 years of Earth Day with compiled videos to showcase Lab sites' sustainability or conservation-driven projects and culture. LLNL's Earth Day video highlights recent site initiatives.
Read more

Changes are made to employee benefits due to the COVID-19 pandemic.
Read more

The Laboratory requires all on-site personnel to use face coverings, in response to evolving health guidance.
Read more

Due to the COVID-19 pandemic, a temporary program is implemented to allow employees with less than 80 hours of accrued sick leave to request an advance of two weeks of sick leave.
Read more

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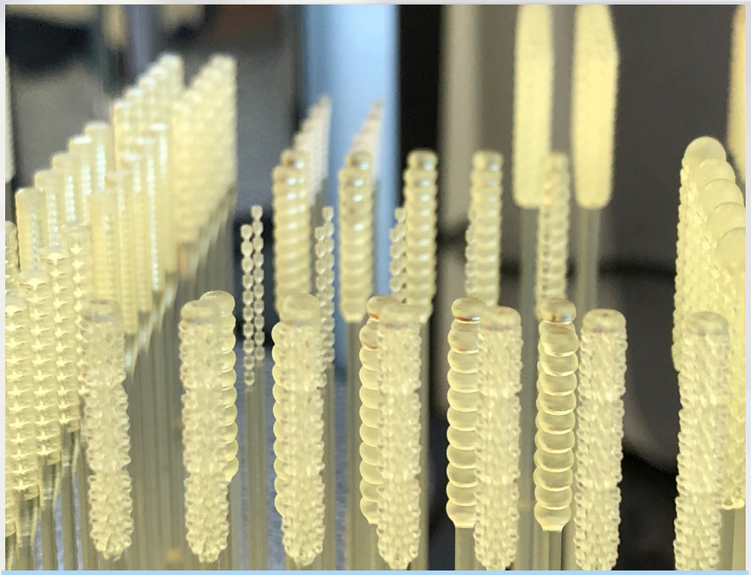

Researchers at Lawrence Livermore National Laboratory mechanically test hundreds of 3D-printed nasal swabs from more than a dozen designs developed through an informal consortium of industry, academia and government.

'Our contribution was to develop mechanical test protocols and swiftly execute a battery of tests for quantitative measurement of the swabs' mechanical response.'

- Engineer Eric Duoss

Lisa Gordon-Hagerty, undersecretary for Nuclear Security and NNSA administrator, thanks personnel for their efforts to remain mission ready and to be strong and resilient to meet future unknowns due to the COVID-19 pandemic. She also reports on the mission and how operating as "One NNSA" across a vast and geographically dispersed enterprise has been put to the test and proven itself.
Read more

MAY 2020

SCIENCE AND TECHNOLOGY

LLNL researchers identify a set of therapeutic antibody sequences, designed in a few weeks using machine learning and supercomputing, aimed at binding and neutralizing SARS-CoV-2.
Read more

LLNL engineers form an ad hoc, rapid response team that tests more than a dozen novel, 3D-printed nasal swab designs (hundreds of individual swabs) from a grassroots coalition of commercial and academic partners. One of the swab designs receives exemption status from the U.S. Food and Drug Administration and is made available to health care providers.
Read more

LLNL researchers study ways to safely and rapidly remove viral threats from N95 respirators, without compromising the device's fit and its ability to filter airborne particles so they can be reused.
Read more

A team of LLNL computer scientists propose a novel deep learning approach aimed at improving the reliability of classifier models designed for predicting disease types from diagnostic images. The method is applied to chest X-ray images of patients diagnosed with COVID-19.
Read more

Combining high-fidelity computer simulations with ultra-high-speed X-ray imaging, LLNL researchers discover a strategy for reducing or even eliminating defects in parts built through laser powder-bed fusion additive manufacturing.
Read more

Two LLNL scientists discover a new mechanism for ignition of high explosives that explains the unusual detonation properties of 1,3,5-triamino-2,4,6-trinitrobenzene (TATB). The research allows for systematic improvements to continuum mechanics models used to assess the TATB performance and safety.
Read more

Lawrence Livermore scientists take a step forward in the design of future materials with improved performance by analyzing its microstructure using AI.
Read more

Trying to determine how negatively charged ions squeeze through a carbon nanotube 20,000 times smaller than a human hair is no easy feat. Not only did LLNL scientists do that but they find that those ions are unexpectedly picky depending on the anion.
Read more

A team of LLNL materials and computer scientists develop machine-learning tools that extract and structure information from the text and figures of nanomaterials articles using state-of-the-art natural language processing, image analysis, computer vision and visualization techniques.
Read more

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LLNL researchers Nick Fischer and Amy Rasley are characterizing nanolipoprotein particle vaccine formulations using a dynamic light-scattering instrument. Detailed characterization of the nanoparticles provide an important quality control metric for vaccine development.

'This project leverages expertise our scientists have worked hard to perfect and highlights our ability to contribute to the Lab's national security mission. The collaborations formed with our university partners are key to producing and testing this novel vaccine. We anticipate this project will significantly enhance our nation's ability to protect our soldiers.'

– Kris Kulp, on the tularemia vaccine

A multi-institutional team of researchers led by LLNL scientist Francesco Fornasiero develop a smart, breathable fabric designed to protect the wearer against biological and chemical warfare agents. Material of this type could be used in clinical and medical settings as well.
Read more

Researchers from Lawrence Livermore and the University of Illinois at Urbana-Champaign demonstrate that kinetically driven processes in a system of rapidly decreasing temperature can result in substantial deviations from chemical equilibrium. This can cause uranium to condense out in metastable oxidation states that have different vapor pressures than the thermodynamically favored oxides, significantly affecting uranium transport.
Read more

Two Lawrence Livermore researchers who have worked for more than eight years to develop a tularemia vaccine are part of a three-institution team that has been funded to bring their candidate to readiness for use.
Read more

PEOPLE

Operations & Business Principal Associate Director Reva Nickelson announces her retirement from the Laboratory, effective July 6.
Read more

OPERATIONS

The Veterans in Energy, Technology and Science host a Memorial Day ceremony via a live broadcast from their official Instagram account.
Read more

Even during a time when the majority of the LLNL workforce is telecommuting, the Asian Pacific American Council comes together (virtually) and gives monetary donations to three local charities.
Read more

The LLNL Diversity and Inclusion Committee launches a pilot program, "Microlearning by Blue Ocean Brain," that will deliver focused learning and professional development digital content direct to employees.
Read more

Local, state and national response to the COVID-19 pandemic continues to evolve, with the state of California establishing a four-stage plan to slowly modify its shelter-in-place order and Bay Area counties extending their shelter-in-place orders through May. Under the extended Alameda County order, current restrictions will largely remain, with limited easing for a small number of lower-risk activities.
Read more

LLNL launches a searchable data portal to share its COVID-19 research with scientists worldwide and the public. The portal houses a wealth of data LLNL scientists gathered from their ongoing COVID-19 molecular design projects.
Read more

The Laboratory population continues to increase, with approximately 25 percent of the Lab's workforce now on-site to support work prioritized by the National Nuclear Security Administration (NNSA), as well as some non-NNSA work supported by other sponsors. The scope of these efforts puts the Lab in a new posture defined by NNSA as "Mission Critical Operations."
Read more

This composite image of the Tycho supernova remnant, captured by NASA's Spitzer and Chandra space observatories and the Calar Alto observatory in Spain, combines infrared and X-ray observations.

'Our success was enabled by strong teamwork, built on a close collaboration between highly talented experimentalists, sophisticated simulations, ingenious diagnostics and incredible facility support as part of the NIF Discovery Science program. When we look up at the sky with our telescopes now, we know how some of those beautiful features are created.'

– Physicist Hye-Sook Park

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In response to the COVID-19 pandemic, LLNL operates a virtual Teacher Research Academy, allowing teachers to enjoy professional development from the safety of their homes.
Read more

The latest edition of *SpotLight*, a look at the people who make up Lawrence Livermore National Laboratory, features employees whose love of sport is a lifelong passion.
Read more

LLNL launches a virtual student portal that will provide resources for the remote summer student cohort.
Read more

Getting to an ideal state of health is challenging, and sometimes everyone needs support to accomplish their goals. During Mission Critical Operations, WorkingWell and StayWell offer telephonic health coaching for free.
Read more

In an unprecedented, online only all-hands address, Goldstein highlights the extreme stress many Lab employees have experienced over the nearly two months of shelter-in-place restrictions.
Read more

Energy Secretary Dan Brouillette introduces a framework for return to work following the COVID-19 pandemic. The framework emphasizes a phased return across the Department of Energy enterprise and recognizes different conditions are in place for various states and regions. The department will respect "local decisions" in its approach to resuming operations.
Read more

The Lab ramps up on-site activities significantly over the past month, but remains in a Deliberate Operations status.
Read more

Informed by guidance from the Centers for Disease Control and Prevention, a team comprised of the institutional biosafety officer, Health Services and representatives from ES&H and O&B conduct a case-specific risk assessment and establish a rapid response protocol.
Read more

Telecommuting employees are encouraged to begin using the new GlobalProtect VPN service. Employees making the switch from Cisco AnyConnect to GlobalProtect report fewer disconnections and faster access.
Read more

The Laboratory main site returns to normal evacuation and accountability procedures during Reduced Mission-Critical Operations. Site 300 employees continue to utilize after-hours procedures until normal operations resume.
Read more

JUNE 2020

SCIENCE AND TECHNOLOGY

LLNL scientists and collaborators explore how the structure and electronic properties of liquid water can be affected by the presence of ions and nanoconfinement.
Read more

To get a better understanding of the high-pressure behavior of iron, an LLNL physicist and international collaborators discover the subnanosecond phase transitions in laser-shocked iron.
Read more

Hands-on work in support of stockpile modernization programs reaches a major milestone with the successful execution of a focused experiment at the High Explosives Applications Facility. The experiment is the first using high explosives at the Laboratory since Alameda County issued

CHANGING COURSE IN A VIRTUAL ENVIRONMENT

The Livermore Laboratory Employee Services Association (LLESA) changed course to create numerous dynamic, virtual work-life programs for employees and their families during the shelter-in-place order and the move to maxiumum telecommuting.

With so many unknowns brought on by the pandemic, LLESA focused its efforts on employee self-care and wellness, both mental and physical. LLESA jumped into action offering all employees free virtual fitness classes, specialty classes and a comprehensive on-demand fitness library. The caregiving and parenting support groups continued virtually, providing employees much needed support during this difficult time. Employee engagement is even more important in a teleworking environment. To keep employees connected, LLESA created a variety of fun, engaging online activities such as online tournaments, team building activities and games, the Run for HOME from Home, Bike to Wherever Day and a virtual vehicle show. Employees shared their talents with friends and coworkers through digital showcases. A virtual karaoke contest and Lab's Got Talent event showcased musical and dance talents and employees shared their digital artwork (videos, photographs, graphic design). In addition, LLESA offered two virtual authors/speakers with Helen Zia and 49ers photographer Terrell Lloyd.

Even though the majority of the workforce is telecommuting, LLESA continues to offer some of the Lab's favorite services like personal document and hard drive shredding and the Red Cross blood drive, all of which occur in a much smaller capacity off-site.

It was not the typical Run for HOME this year, but one thing remained consistent: employee spirit. The Run for HOME was held virtually with plenty of employee participation. Not only the runners and walkers got involved — families and work groups joined in the fun, displaying their creative costumes and pumpkin carvings and decorating. The best overall individual costume contest was "Notorious RBG" by Deanna Willis, and the most creative pumpkin carving winner was "Pumpkin Attack" by Lisa Hughey and Harris Mason.

a shelter-in-place order and the Laboratory went into "Reduced Mission Critical Operations" in response to the COVID-19 pandemic.
Read more

A Bay Area company develops a test to detect SARS-CoV-2 based on an LLNL technology while a second Bay Area firm licensing LLNL technology gains approval for a product to diagnose COVID-19.
Read more

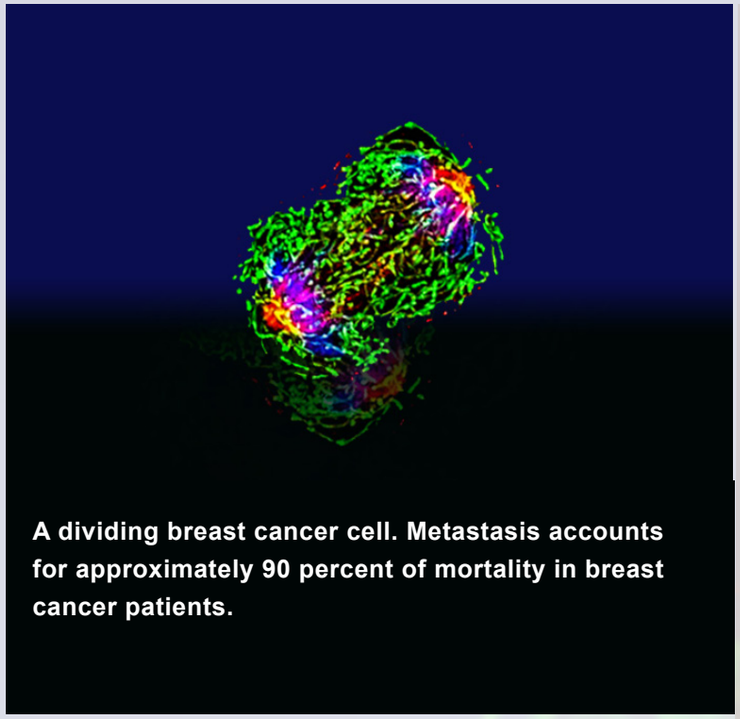
Following weeks of prototyping, LLNL partners with private industry to mass-produce a simple mechanical ventilator developed for COVID-19 patients that has been authorized for emergency use by the Food and Drug Administration. The novel ventilator uses parts not typically used in ventilator manufacturing and thus avoids disrupting supply chains.
Read more

LLNL joins a collaborative research effort with a focus on improving the speed and accuracy of diagnostic tests, while enhancing the ability to adapt diagnostic tools as COVID-19 evolves.
Read more

Experiments at the National Ignition Facility mimic the inner workings of astrophysical shock waves.
Read more

LLNL researchers develop a brain-on-a-chip that allows for the modeling and study of neuronal communities as they grow and mature.
Read more

Despite working remotely, two undergraduate summer interns become co-authors with LLNL scientists on a paper documenting research on an emerging class of water desalination technologies.
Read more



A dividing breast cancer cell. Metastasis accounts for approximately 90 percent of mortality in breast cancer patients.

'I'm blown away. It's an incredible honor to be selected for this award. The national labs have so many talented early career scientists. This award is a game-changer for building my research career at LLNL.'

– Scientist Erin Nuccio

A team of LLNL researchers demonstrate that velocity scaling and dispersion in wave transmission is based on grainy particle arrangements and chains of force between them, while reduction of wave intensity is caused mainly from grainy particle arrangements alone.
Read more

The Data Science Challenge with the University of California, Merced offers an all-virtual program. For two weeks, 21 UC Merced students (16 undergraduate and five graduate students) work from their homes to develop machine learning models capable of differentiating potentially explosive materials from other types of molecules.
Read more

Commissioned by the Department of Energy, the National Academy of Sciences, Engineering and Medicine releases an assessment of the state and future of plasma sciences that outlines recommendations for the advancement of plasma science. LLNL physicist Gail Glendinning serves on the report committee.
Read more

An international team including LLNL researchers develops a new experimental setup to measure how chemical elements behave and mix deep inside icy giants.
Read more

LLNL biologists find another mechanism that affects the maintenance and expansion of malignant breast cancer cells.
Read more

LLNL researchers describe the development of a deep-learning-driven model capable of quickly and accurately emulating complex scientific processes, including the high-energy density physics involved in inertial confinement fusion.
Read more

A team of researchers including LLNL scientists detail the first quantitative measurements of the magnetic field structure of plasma filamentation driven by the Weibel instability, using a novel optical Thompson scattering technique.
Read more

The Department of Energy's Office of Technology Transitions announces new resources for innovators to combat COVID-19 through its Lab Partnering Service and the COVID-19 Technical Assistance Program. The initiatives allow America's innovators to readily access vital resources and connect and partner with experts at 17 national laboratories, including LLNL.
Read more

PEOPLE

Director Bill Goldstein discusses how strong values and a constructive culture can help in navigating challenging and confusing times. He introduces Culture Beat in *Newsline* to create the culture that we aspire to through actions and participation in the events and reading the stories that will be shared.
Read more

Two LLNL scientists are awarded the Department of Energy's Office of Science Early Career Research Program award. Federica Coppari and Erin Nuccio are among 76 scientists nationwide selected for the recognition.
Read more

The Livermore Pride Employee Resource Group kicks off Pride Month with a presentation by Karissa Sanbonmatsu titled "Toward a Better Understanding of Gender."
Read more

In honor of Juneteenth, the African-American Body of Laboratory Employees, Physical & Life Sciences and the

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From left: Lawrence Livermore National Laboratory optical engineer Brian Bauman, mechanical designer Darrell Carter and Alex Pertica, the deputy program leader for the Lab's Space Science and Security Program, look over several small space telescopes, three of which have already flown in space.

'The climate we are experiencing is influenced by many factors. In nature, the atmosphere is very noisy but it also responds to external factors that act at different paces and places, a bit like how different musical instruments contribute to a song, each with their own tonal signatures, rhythms and placements within the song.'

– LLNL climate scientist Celine Bonfils

Office of Strategic Diversity and Inclusion Programs hosts Vernon Burton, a distinguished scholar, historian, researcher and professor at Clemson University.
Read more

OPERATIONS

Lawrence Livermore National Security selects North Wind Services as the supplemental labor provider for Lawrence Livermore National Laboratory.
Read more

The National Nuclear Security Administration announces LLNL is the winner of nine Excellence Awards for 2019, the most the Lab has received in a given year.
Read more

The Department of Energy announces the recipients of the fall 2019 awards for the High Performance Computing for Energy Innovation initiative, including four newly funded projects led out of Lawrence Livermore National Laboratory.
Read more

The National Nuclear Security Administration and Lawrence Livermore break ground on its Exascale Computing Facility Modernization project, which will substantially upgrade the mechanical and electrical capabilities of the Livermore Computing Center.
Read more

JULY 2020

SCIENCE AND TECHNOLOGY

Lawrence Livermore researchers deliver four pulsed power modules to Nevada National Security Site, making excellent time despite many challenges presented by COVID-19.
Read more

Research led by LLNL scientists identifies two signatures or "fingerprints" that explain why arid conditions are spreading worldwide, and why the Western United States has tended toward drought conditions since the 1980s while the African Sahel has recovered from its prolonged drought.
Read more

Two papers featuring Lawrence Livermore scientists are accepted in the 2020 International Conference on Machine Learning, one of the world's premier conferences of its kind.
Read more

LLNL researchers, in collaboration with Pennsylvania State University and Idaho National Laboratory, design a new process, based on a naturally occurring protein that could extract and purify rare earth elements from low-grade sources.
Read more

Lawrence Livermore and Tyvak Nano-Satellite Systems Inc. reach a Cooperative Research and Development Agreement to develop innovative compact and robust telescopes for nanosatellites.
Read more

LLNL scientists conduct the most advanced and comprehensive analysis of climate sensitivity undertaken that reveals, with more confidence than ever, how sensitive the Earth's climate is to carbon dioxide.
Read more

Lawrence Livermore scientists couple X-ray experiments with high-fidelity simulations to investigate a widely used family of ionic liquids confined in carbon nanopores

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California Lt. Gov. Eleni Kounalakis meets Lab Director Bill Goldstein during her visit to LLNL.

'As lieutenant governor, I greatly appreciate the opportunity to hear all of the extraordinary work that Lawrence Livermore is doing in response to the COVID-19 crisis. The briefings that my team and I heard gave us a greater understanding of the capability and capacity of the Lab to help our state and our nation combat the challenges presented by COVID-19 and make our state and our country safer.'

-California Lt. Gov. Elena Kounalakis

typically used in supercapacitors. The work represents the first study that combines first-principles molecular dynamics and X-ray scattering to analyze spatially confined ionic liquids, enabling new insights into exotic properties that only occur within these exceptionally small spaces.
Read more

LLNL updates its energy flow charts to include state-by-state energy use for 2015-2018. It also releases carbon emissions charts that depict a breakdown of all 50 states' carbon emissions from 2014-2017.
Read more

Lawrence Livermore scientists and collaborators use machine learning to address two key barriers to industrialization of the two-photon lithography 3D printing process: monitoring of part quality during printing and determining the right light dosage for a given material.
Read more

Mimicking the structure of the kidney, a team of scientists from Lawrence Livermore National Laboratory and the University of Illinois at Chicago create a 3D nanometer-thin membrane that breaks the permeance-selectivity trade-off of artificial membranes.
Read more

When an Atlas V-541 rocket lifts off for Mars from Cape Canaveral Air Force Station with the Perseverance rover in tow, two LLNL scientists, Steve Homann and Jessica Osuna, are in the Kennedy Space Center's radiological control center in the unlikely event that there is a problem during launch with the rover's plutonium-238 nuclear power source.
Read more

LLNL researchers use X-ray scattering technology to examine how nanoparticle arrangement affects color while the display is in operation, and for the first time, perform experimental validation of a model of the electrophoretic deposition process capable of accurately predicting particle spacing given a certain applied voltage.
Read more

PEOPLE

Phil Pellette joins Weapons & Complex Integration as the deputy principal associate director for Operations.
Read more

Bill Goldstein announces he will retire as director of LLNL and president of Lawrence Livermore National Security, LLC, following the selection of his successor.
Read more

California Lt. Gov. Eleni Kounalakis visits Lawrence Livermore National Laboratory to hear updates on LLNL's COVID-19 research and rapid response efforts and to learn about the Lab's capabilities for addressing future pandemics.
Read more

Lawrence Livermore physicist Yuan Shi earns the American Physical Society's Marshall N. Rosenbluth Outstanding Doctoral Thesis award for his work in plasma physics.
Read more

Three scientists from LLNL receive the 2020 John Dawson Award for Excellence in Plasma Physics Research from the American Physical Society.
Read more

The Lab director's Chief of Staff Al Ramponi announces his retirement from the Laboratory at the end of the year.
Read more

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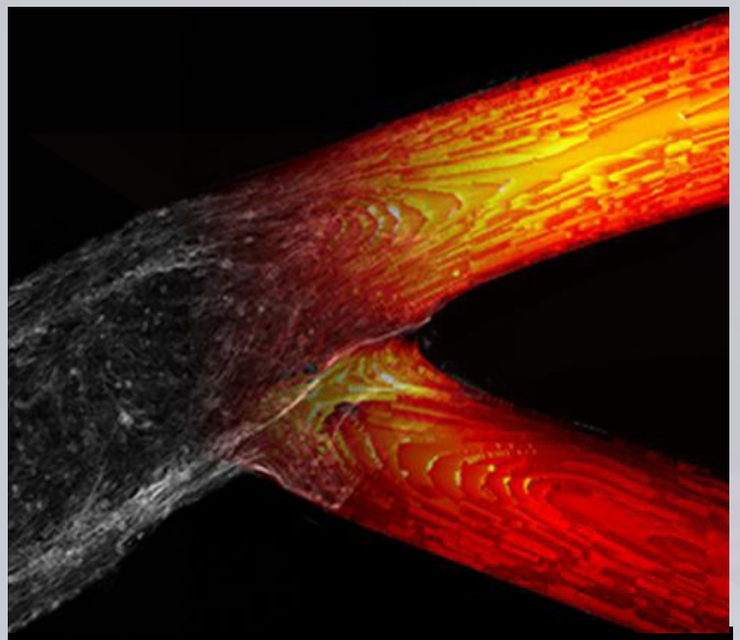

Researchers at Lawrence Livermore National Laboratory and Duke University combine 3D bioprinting and computational flow models to analyze the physics behind circulating tumor cell behavior and the cells' attachment to the vascular endothelium, the layer of cells that line the interior surface of blood vessels.

'Adapting this advanced bioprinting process to engineer functional, perfusable human brain vasculature was extremely challenging, however we now have a strong handle on the technique and can potentially fabricate a wide variety of living human tissue constructs.'

– Research staff engineer William "Rick" Hynes

OPERATIONS

The Weapons & Complex Integration Radioactive and Hazardous Waste Management (RHWM) Program implements a new tool for disposal of radioactive and hazardous waste, enabling RHWM to meet an important Department of Energy milestone and open the door for disposal of legacy waste with higher levels of radioactivity than was feasible before.
Read more

The Laboratory moves from Limited Operations to Normal Operations with Maximized Telework.
Read more

University of California Regent and Chair of Lawrence Livermore National Security, LLC Charlene Zettel announces the search for the next director of Lawrence Livermore National Laboratory is underway.
Read more

AUGUST 2020

SCIENCE AND TECHNOLOGY

LLNL scientists explore the hypothesis that compressive shearing may have driven prebiotic chemistry.
Read more

Using the power of the National Ignition Facility, the world's highest-energy laser system, researchers at Lawrence Livermore and an international team of collaborators develop an experimental capability for measuring the basic properties of matter, such as the equation of state, at the highest pressures thus far achieved in a controlled laboratory experiment.
Read more

LLNL researchers increase the complexity of neuronal cultures grown on microelectrode arrays, a key step toward more accurately reproducing the cellular composition of the human brain outside the body.
Read more

Initial National Ignition Facility experiments using a full-scale version of the frustraum hohlraum produce nearly round inertial confinement fusion implosions and more laser-induced energy absorption by the fuel-filled capsule.
Read more

To better understand risk factors for people with coarctation of the aorta, a large team of researchers, including a former Lawrence Fellow and her mentor at Lawrence Livermore, combine machine learning, 3D printing and high performance computing simulations to accurately model blood flow in the aorta.
Read more

An LLNL team publishes new supercomputer simulations of a magnitude 7.0 earthquake on the Hayward Fault, representing the highest-ever resolution ground motion simulations from such an event on this scale.
Read more

To optimize catalyst performance, a team of scientists from Lawrence Livermore and collaborators develop a detailed understanding of the effect of pretreatment-induced nanoscale structural and compositional changes on catalyst activity and long-term stability. The research could make the production of the important industrial feedstock chemical acetaldehyde more efficient.
Read more

A research team including LLNL oceanographer Paul Durack finds that more than 50 percent of the world's oceans already could be impacted by climate change, with this figure rising to 80 percent over the coming decades.
Read more

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MOVING FORWARD ON THE MISSION

When California ordered a shelter in place in March 2020, the Lab moved into a minimum safe operations posture, reducing the number of on-site personnel to only those necessary to ensure the safety and security of the site and its facilities.

Once this posture was reached, the Laboratory assessed the scope of NNSA-identified mission-essential activities and began a gradual, safe return to on-site work in support of LLNL's national security responsibilities.

This careful, strategic resumption of work paid off: Despite the pandemic, the Laboratory has been able to successfully meet vital mission needs, while protecting the health and safety of the workforce.

LLNL researchers have met important deliverables in support of the Stockpile Stewardship Program. This includes passing the first program-level key milestone in the W87-1 Modification Program; completing assembly and qualification of 16 prototype high-voltage solid state pulsed-power drivers for the Scorpius radiography project; and successfully supporting 10 priority areas in NNSA's FY20 "Getting the Job Done List" (GTJDL). The Laboratory has been tapped to play a key role in a majority of FY21 GTJDL efforts and that work is well underway.

During his visit to the Lab, Congressman Eric Swalwell, left, is greeted by Lab Director Bill Goldstein, right, and Livermore Field Office Manager Pete Rodrik, back. Swalwell visited the Lab for briefings on foreign nuclear weapons development updates, cybersecurity, civil nuclear cooperation and technology transfer and international inertial confinement fusion research.

High energy density scientists at Lawrence Livermore help launch a new National Science Foundation effort to understand the physical and astrophysical properties of matter under pressures strong enough to change the structure of individual atoms.
Read more

LLNL and artificial intelligence computer company Cerebras Systems integrate the world's largest computer chip into the National Nuclear Security Administration's Lassen system, upgrading the top-tier supercomputer with cutting-edge AI technology.
Read more

By combining simulations with high-speed videos taken during the laser powder-bed fusion process, LLNL scientists visualize the ductile-to-brittle transition in 3D-printed tungsten in real-time, allowing them to observe how microcracks initiated and spread in the metal.
Read more

Lawrence Livermore scientists pair 3D-printed, living human brain vasculature with advanced computational flow simulations to better understand tumor cell attachment to blood vessels, the first step in secondary tumor formation during cancer metastasis.
Read more

PEOPLE

Bruce Hendrickson, associate director of Computing, discusses the Laboratory's commitment to be actively inclusive and treat everyone with respect.
Read more

Pat Falcone, deputy director of Science & Technology, discusses the Laboratory's commitment to act with integrity and ethics in all we do.
Read more

Cal Fire officials brief local city managers and others on the ongoing efforts to quell the SCU Complex Fire on Aug. 28. As of Sept. 1, the blaze had consumed more than 390,000 acres across five counties, making it the second-largest wildfire incident in state history.

'LLNL CERT members without a doubt aided and assisted an untold amount of people with much-needed information as countless people lived in fear from the threat of fire and thousands of structures were threatened. I'm just so proud to be a part of the CERT group; we truly made a difference.'

– Engineering Directorate Senior Superintendent and CERT volunteer Randy Pico

The Global Security Principal Directorate holds its biannual Gold Awards ceremony to recognize outstanding contributions and onetime achievements that are clearly above and beyond the demands of normal job performance.
Read more

SPIE, the International Society for Optics and Photonics, announces the election of Lawrence Livermore National Laboratory research engineer Richard Leach as a senior member of the organization.
Read more

The Office of the Deputy Director for Science and Technology announces the winners of the 2020 Deputy Director's S&T Excellence in Publication Awards.
Read more

The Weapons & Complex Integration Directorate holds its annual Gold Awards ceremony to recognize outstanding contributions and onetime achievements in support of the Laboratory's national security missions.
Read more

Congressman Eric Swalwell visits the Lab for briefings on foreign nuclear weapons development updates, cybersecurity, civil nuclear cooperation and technology transfer and international inertial confinement fusion research.
Read more

Anantha Krishnan, associate director for Engineering, announces he will retire from the Laboratory at the end of October 2020.
Read more

A shape memory foam material developed by Lawrence Livermore researchers is the foundation of a lifesaving medical device that wins a national technology transfer award.
Read more

Five Laboratory teams win 2020 Director's Science & Technology awards.
Read more

OPERATIONS

Director Bill Goldstein updates employees on the Lab's COVID-19 situation, announcing the extension of its telecommuting agreement through the end of the fiscal year, and presumably beyond.
Read more

The pandemic curtails in-person tours of the National Ignition Facility, but visitors can now get a look inside thanks to a new virtual tour program.
Read more

SEPTEMBER 2020

SCIENCE AND TECHNOLOGY

Exactly how protons and neutrons share the energy that keeps them bound within the nucleus — and even where they are within the nucleus — remain key puzzles for nuclear physicists. A new study by researchers at LLNL and Washington University in St. Louis tackles these questions by leveraging data from nuclear scattering experiments.
Read more

Data correlating two factors that lead to implosion asymmetries bring LLNL scientists a step closer to understanding the gap between simulations and performance of inertial confinement fusion experiments at the National Ignition Facility.
Read more

Doctoral student Victor Baules spent his summer studying dark matter.

‘I am always struck by how our Laboratory adapts to the changes our world inevitably brings.’

– Anantha Krishnan, former AD of Engineering

The hallmark of a perfectly thrown football is a tight spiraling of the tip around the trajectory of the parabolic path of flight. Why the tip follows the trajectory has presented a paradox for some time, but a team of researchers including LLNL physicist Willy Moss provides a simple resolution to this paradox.
Read more

Tearing an anterior cruciate ligament can be an excruciatingly painful injury. Nearly 50 percent of these patients will develop a secondary form of osteoarthritis, deemed post-traumatic osteoarthritis (PTOA). Researchers from LLNL and the UC Davis Medical Center find that treatment with antibiotics prior to the injury could reduce inflammation in the injured joint and slow the progression of PTOA.
Read more

LLNL researchers create carbon nanotube pores that are so efficient at removing salt from water that they are comparable to commercial desalination membranes.
Read more

LLNL researchers and collaborators at the U.S. Geological Survey and the Scripps Institution of Oceanography at UC San Diego measure electrical properties of methane hydrates, leading to a better understanding of gases in seafloors.
Read more

LLNL researchers complete assembly and qualification of 16 prototype high-voltage solid state pulsed-power drivers (pulsers), enabling the project to still meet the delivery schedule for the Scorpius radiography project, despite COVID-19 workplace restrictions. Scorpius is a multi-lab partnership with the objective of delivering four-pulse radiography to support the national effort to modernize the U.S. nuclear stockpile.
Read more

PEOPLE

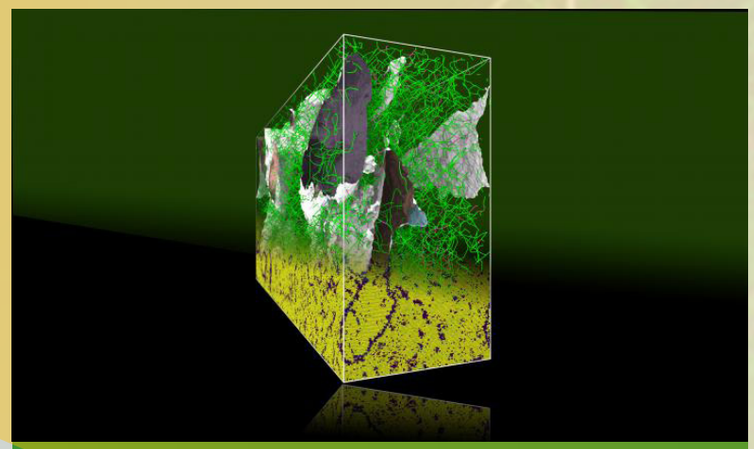
Doctoral student Victor Baules spends his summer exploring the connection between dark energy and the expansion of our universe, but due to the pandemic, his research fellowship is more down-to-earth, taking place from his home in Alabama.
Read more

Charles Richard, U.S. Strategic commander for the U.S. Navy, visits the Lab to hear briefings on nuclear responsibilities, advanced conventional weapons, missile defense and diode-pumped alkali lasers, as well as a Global Security and Z Division overview, including threat assessment and emerging national security challenges. He also tours the National Ignition Facility.
Read more

When a severe lightning storm sparks what would become a conflagration consuming more than 390,000 acres and threatening the communities of Livermore and Pleasanton, more than 20 volunteers with LLNL’s Community Emergency Response Team answer the state’s call for help.
Read more

Following his visit to the Lab, Adm. Charles A. Richard, commander, United States Strategic Command (USSTRATCOM), holds a town hall meeting via Webex for LLNL employees.
Read more

Twelve scientists and engineers are named to LLNL’s sixth annual Early and Mid-Career Recognition Program in recognition of their scientific and technical accomplishments, leadership and future promise.
Read more



To understand exactly how metals respond to high-rate compression in molecular dynamics simulations, LLNL scientists use novel methods of in silico microscopy to reveal defects in the crystal lattice (green and red line objects and gray surface objects at the top) while removing all the atoms (yellow balls at the bottom) for clarity.

'The pandemic has forced a lot of patience into our process, and a lot of creativity in how we communicate with stakeholders.'

– Pritika Kumar, W87-1 requirements lead

Berni Alder, known as the father of molecular dynamics, dies at 94.
Read more

A group of O&B Maintenance and Labor Shop employees are recognized for their efforts to assist first responders and maintain Site 300's facilities after an encroaching wildfire resulted in evacuations.
Read more

As part of an ongoing series of commitment columns from the Senior Management Team, Anantha Krishnan, associate director of Engineering, shares his thoughts on embracing innovation, agility and new ideas.
Read more

Jasmine Bowers, former summer student at LLNL, makes history when she becomes the first Black student to earn a doctorate in computer science from the University of Florida, where she attended through the GEM fellowship program.
Read more

Félicie Albert, staff scientist in the NIF & Photon Science Directorate and the Joint High Energy Density Sciences organization, is elected a Kavli Fellow of the U.S. National Academy of Sciences.
Read more

LLNL geologist Lars Borg and physicist Megan Bruck Syal are named by the National Academies of Science to a pair of Planetary Science and Astrobiology Decadal Survey committees, Borg as a member of the survey's steering committee and Syal as a member of the Small Solar System Bodies panel.
Read more

OPERATIONS

More than a dozen volunteers from LLNL, Sandia/California, the University of the Pacific and the American Association of University Women host a special drive-thru for the nearly 200 registrants to pick up T-shirts and workshop supplies for the first-ever virtual San Joaquin Expanding Your Horizons conference.
Read more

In recognition of the unique challenges posed by virtual work, the Lab releases guidance regarding best practices for meetings.
Read more

LLESA, LLNL and Sandia/California partner to host the annual Bay Area Bike to Work Day – changed to Bike to Wherever Day to reflect the changes following the pandemic. LLESA expands the event to encourage participants to bike and track their mileage for the entire week.
Read more

Charlene Zettel, chair of the LLNL Director Search Committee, provides an update on the search for the next director.
Read more

The Lab celebrates National Hispanic Heritage Month, which recognizes the contributions and importance of Hispanics and Latinos to the United States, as well as U.S. residents whose ancestors came from Spain, Mexico, the Caribbean, Central America and South America.
Read more

The Lab holds the 2020 Virtual ESS&H Fair, an annual event to provide employees with important health, safety and security information.
Read more

Director Bill Goldstein, WCI Principal Associate Director Kim Budil, NNSA Administrator Lisa Gordon-Hagerty and Livermore Field Office Manager Pete Rodrik cut the ribbon for the new Applied Materials and Engineering campus.

'Investment in infrastructure is an investment in people. New facilities support recruitment and retention of highly skilled staff. We look forward to the work that will occur within these walls to support stockpile modernization and our country's nuclear security.'

– Lisa E. Gordon-Hagerty, administrator of the National Nuclear Security Administration and U.S. Department of Energy under secretary for Nuclear Security

Director Bill Goldstein reconfirms LLNL's commitment to diversity and inclusion and shares an update on a recent DOE directive.
Read more

The Lab provides important information on timely reporting of illness, one of many controls that help to protect the health and safety of the workforce.
Read more

The Lab extends the blanket telecommuting agreement to Jan. 31, 2021.
Read more

The Lab expands drive-thru and walk-up flu clinics.
Read more

Construction crews wrap up a long-anticipated electrical system upgrade that will supply LLNL and neighboring Sandia/California with reliable, redundant underground power, completing it months ahead of schedule and well under budget.
Read more

The Lab provides an update and guidance on managing telecommuting location changes.
Read more

OCTOBER 2020

SCIENCE AND TECHNOLOGY

LLNL researchers pass their first program-level key milestone in the W87-1 Modification Program, keeping the program on schedule despite work stoppages due to the COVID-19 pandemic.
Read more

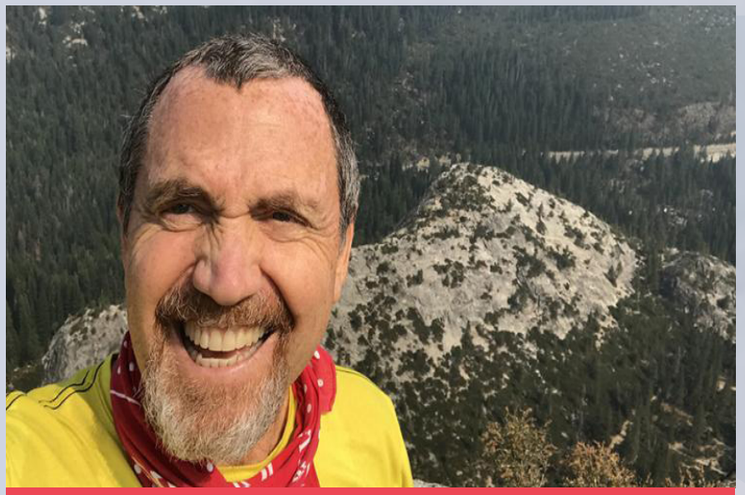
LLNL scientists begin collecting and testing environmental samples from locations around the Lab's main site as a proof-of-concept study aimed at determining the feasibility of identifying traces of the SARS-CoV-2 virus, which causes COVID-19. The internally funded study is designed to assess whether traces of genetic material from the virus can be detected using standard environmental sampling practices and tools.
Read more

LLNL will provide significant computing resources to students and faculty from nine universities that were newly selected for participation in NNSA's Predictive Science Academic Alliance Program.
Read more

To solve a 100-year puzzle in metallurgy about why single crystals show staged hardening while others don't, LLNL scientists take it down to the atomistic level.
Read more

More than 150 girls log on to their computers to participate in the first-ever virtual San Joaquin Expanding Your Horizons conference, an LLNL-sponsored event with a long history of inspiring young women and fostering awareness of careers in science, technology engineering and mathematics.
Read more

Research projects ranging in scope from multiscale simulations of warm dense plasmas to modeling tumor cell dynamics in the bloodstream are allocated time on Laboratory supercomputers under the recently announced Institutional Unclassified Computing Grand Challenge Awards.
Read more



LLNL atmospheric scientist Ben Santer is honored with the American Geological Union's 2020 Bert Bolin Award.

'This award has deep personal meaning for me. Back in 1995 and 1996, in the middle of some difficult times, Bert Bolin (who was then the chairman of the IPCC) publicly rebutted false allegations that I had behaved unprofessionally as convening lead author of Chapter 8 of the IPCC Second Assessment Report. I've never forgotten his kindness and encouragement.'

– Atmospheric scientist Ben Santer

With funding from the Coronavirus Aid, Relief and Economic Security Act, LLNL, chipmaker AMD and information technology company Supermicro upgrade the supercomputing cluster Corona, providing additional resources to scientists for COVID-19 drug discovery and vaccine research.
Read more

LLNL installs a state-of-the-art artificial intelligence accelerator from SambaNova Systems, allowing researchers to more effectively combine AI and machine learning with complex scientific workloads.
Read more

A Lawrence Livermore team develops the first-ever living 3D-printed aneurysm to improve surgical procedures and personalize treatments.
Read more

Identifying the areas where paleowater — water that recharged before the Holocene started 12,000 years ago — is pumped for drinking water supply helps managers decide whether groundwater can sustainably meet future demands. In a recent study, researchers from LLNL, CSU East Bay and UC Santa Barbara identify paleowater using three key isotopic indicators of groundwater residence time.
Read more

Researchers at LLNL adapt a new class of materials for their groundbreaking volumetric 3D printing method that produces objects nearly instantly, greatly expanding the range of material properties achievable with the technique.
Read more

LaserNetUS, a network of facilities operating ultra-powerful lasers including those at LLNL, receives $18 million from the Department of Energy for user support.
Read more

PEOPLE

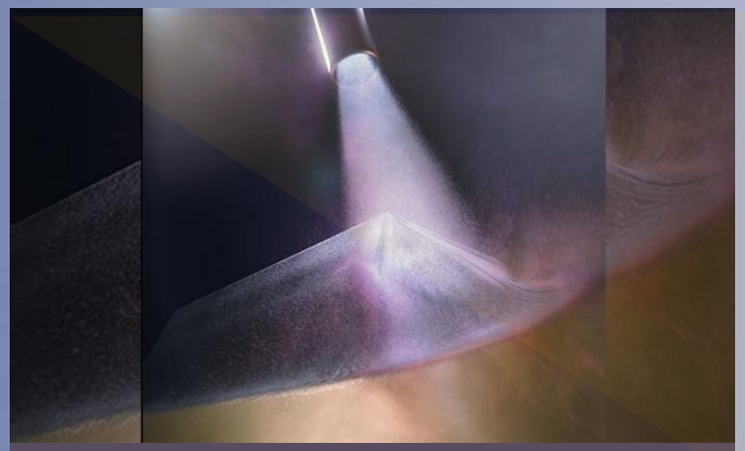
DOE's Office of Science announces the first round of 2020 Graduate Student Research Program awardees. Beginning in January, Jordan Fox, a graduate student in computational nuclear physics at the Computational Science Research Center at San Diego State University, will spend four months at LLNL studying uncertainty in nuclear shell-model calculations as part of his Ph.D. thesis.
Read more

As part of an ongoing series of commitment columns from the Senior Management Team, Kim Budil, principal associate director of Weapons and Complex Integration, shares her thoughts on demonstrating passion for our missions and meaningful impact.
Read more

Renowned LLNL atmospheric scientist Ben Santer is honored with the American Geophysical Union's 2020 Bert Bolin Award, presented annually to recognize groundbreaking research or leadership in global environmental change through cross-disciplinary, interdisciplinary and trans-disciplinary research in the past 10 years.
Read more

Three state-certified journeyman machinists, part of the Machinist Apprentice Program, accept job offers to support the hardware needs of LLNL's engineers and scientists for conducting highly specialized research.
Read more

DOE Office of Science Director Chris Fall visits the Lab for briefings on various science projects, including the Lab's role in the Rubin Observatory data processing and work in the National Virtual Biotechnology Laboratory, CARES Act computing capabilities and Advanced



A cold-spray chamber is shown during deposition, with the nozzle at the top of the image and a near-full density sample being fabricated in the center. Particles of the brittle thermoelectric bismuth telluride are accelerated to more than 900 meters per second, or almost Mach 3, in inert gas and directed onto a copper surface, laying down the strips that form the basis of a functioning thermoelectric generator to harvest waste heat.

'This recognition in the R&D 100 competition is a tribute to the innovative spirit of our scientists and engineers.'

– Lab Director Bill Goldstein

Scientific Computing Research to study traumatic brain injury and neurotech cognitive simulation.
Read more

One Lab employee and a quartet of other Lab employees garner two national technology transfer awards — one for a radiation simulation training tool and the other for a new ventilator to assist COVID-19 patients.
Read more

Recipients of the 2020 Director's Awards are honored in a special virtual ceremony presented by Lab Director Bill Goldstein, Deputy Director for Science & Technology Pat Falcone and Deputy Director Linda Bauer.
Read more

Beginning with her work at the Lick Observatory on Mount Hamilton, 2020 Nobel Prize winner Andrea Ghez has close ties with LLNL.
Read more

Four LLNL scientists are selected as 2020 fellows of the American Physical Society.
Read more

LLNL researchers are among the developers of the top 100 industrial inventions worldwide, winning an R&D 100 award at this year's annual event.
Read more

OPERATIONS

Gov. Gavin Newsom signs AB 1867 into law, providing up to 80 hours of COVID-19 supplemental paid sick leave to employees working in California.
Read more

With help from Lisa Gordon-Hagerty, administrator of the National Nuclear Security Administration and U.S. Department of Energy under secretary for Nuclear Security, LLNL breaks ground on what will be a state-of-the-art Emergency Operations Center. Gordon-Hagerty also assists in the dedication of the Lab's recently completed Applied Materials and Engineering campus.
Read more

LLESA begins offering virtual team-building activities for group meetings or celebrations.
Read more

Requirements on mobile devices inside Limited Area buildings are now fully in effect, following the requirements of the Implementation Plan for Advance Change Directive 470.6, Use of Mobile Devices Within National Nuclear Security Administration Secure Spaces.
Read more

LLNL transitions to Phase 2 in NNSA's "Phased Recovery and Re-entry Plan" Framework.
Read more

Forty-four percent of Lab employees respond to a survey on telecommuting, the results of which will inform committee recommendations about the future role of telecommuting at the Lab.
Read more

The Lab breaks ground on a new small arms training facility at Site 300, where the Lab's Protective Service officers will receive instruction.
Read more

LLNL updates guidance on telecommuting location changes in response to employee and manager questions.
Read more

The LLESA New Hires Networking Group begins weekly

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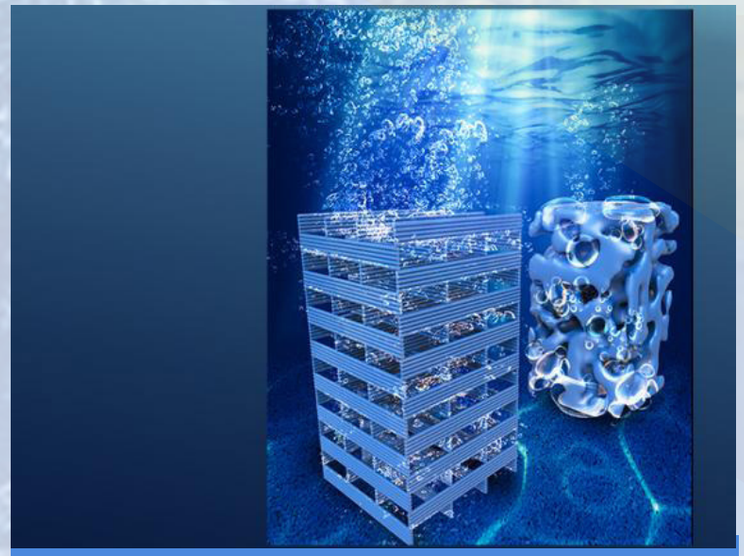

Architected 3D electrodes: Managing bubble migration in gas evolution reactions at high current densities.

'This new electrode gets rid of the gas bubbles faster. You don't want the bubbles to be trapped in the material; you want to be able to pull them out as quickly as possible and use them as a fuel source.'

– LLNL materials scientist Cheng Zhu

virtual "water cooler chats" to foster connections with new colleagues.
Read more

In recognition of important employee and team accomplishments in operational areas that contribute to the successful execution of the Lab's overall missions, the Director's Office awards the annual Institutional Operational Excellence Awards to 13 teams.
Read more

LLNL migrates to a new, more secure Webex service.
Read more

The Livermore Pride employee resource group hosts a LGBTQ+ History Month panel discussion.
Read more

To kick off this year's Run for HOME from home and the official opening of the Lab's annual employee charitable giving program, the Helping Others More Effectively (HOME) Campaign, Bruce Hendrickson, associate director, Computing, records a special video message in the spirit of this year's theme of "Better Together, Even When We're Apart."
Read more

NOVEMBER 2020

SCIENCE AND TECHNOLOGY

To better understand why carbon atoms are always in action, Lawrence Livermore scientists and collaborators create a new conceptual framework as well as a simulation model that traces the path of individual carbon atoms as they interact with the environment.
Read more

LLNL and its partners AMD, Supermicro and Cornelis Networks install a new high performance computing cluster with memory and data storage capabilities optimized for data-intensive COVID-19 research and pandemic response.
Read more

A Lawrence Livermore team simulates the cross-linking of 3D-printed polymer networks, a key step toward developing new functional resins for light-based 3D-printing techniques including two-photon lithography and volumetric additive manufacturing.
Read more

The scientific computing and networking leadership of 17 Department of Energy national laboratories is showcased at SC20, the International Conference for High-Performance Computing, Networking, Storage and Analysis, taking place for the first time via a completely virtual format.
Read more

After more than two years of joint research, LLNL, Total and Stanford University release an open-source, high-performance simulator for large-scale geological carbon dioxide storage.
Read more

To reduce the risk of unintended ecological consequences from environmentally deployed, genetically engineered microorganisms, Lawrence Livermore scientists and collaborators develop a built-in "security mechanism" that ensure they function where and when needed.
Read more

Lawrence Livermore, along with partners Intel, Supermicro and Cornelis Networks, deploy "Ruby," a high performance computing cluster that will perform functions

Since September, 18 shipments of TRU waste have left LLNL in specially designed, safe shipping containers for permanent disposal in New Mexico.

'We think of carbon as always being in motion, like water molecules in a river. Sometimes they get stuck (like in an eddy at the edge of a river), but eventually they dislodge and move on toward their final fate — mineralization to CO2.'

– LLNL scientist Jennifer Pett-Ridge

for the National Nuclear Security Administration and support the Laboratory's COVID-19 research.
Read more

Five Lawrence Livermore employees, including Director Bill Goldstein, play key roles in the sixth annual Bay Area Battery Summit.
Read more

LLNL scientists look at isotopes of the element molybdenum found on meteorites and determine that our sun and solar system formed over the short time span of 200,000 years.
Read more

The Department of Energy announces two rounds of awards for the High Performance Computing for Energy Innovation Program, including five projects at Lawrence Livermore.
Read more

Lawrence Livermore National Laboratory lays claim to housing four of the world's 100 most powerful supercomputers, more than any other institution according to the TOP500 List released during the virtual Supercomputing 2020 conference.
Read more

Scientists at Lawrence Livermore create the largest defect-free membranes reported to date that fully exploit the unique mass transport properties of carbon nanotubes as flow channels.
Read more

Lawrence Livermore researchers use multi-material 3D printing to create tailored gradient refractive index glass optics that could make for better military specialized eyewear and virtual reality goggles.
Read more

The High Performance Computing for Energy Innovation Program, managed by LLNL for the Department of Energy (DOE), seeks new industry proposals for short-term projects that could benefit from world-class DOE high performance computing and expertise.
Read more

To make electrolysis more resourceful, a Lawrence Livermore team partners with the University of California, Santa Cruz and two other institutions to develop a 3D-printed electrode that lessens the problems that occur with gas bubbles that are generated in the process.
Read more

A team of Lawrence Livermore researchers find that the global climatic consequences of a regional nuclear weapons exchange could range from a minimal impact to more significant cooling lasting years.
Read more

A machine-learning model developed by a team of Lawrence Livermore scientists to aid in COVID-19 drug discovery efforts is a finalist for the Gordon Bell Special Prize for High Performance Computing-Based COVID-19 Research.
Read more

PEOPLE

Huban Gowadia, principal associate director of Global Security, discusses excellence and rigor through constructive debate as part of the Senior Management's team series of commitments to complement the Lab's values.
Read more

The Association for Women in Mathematics names Lawrence Livermore computational scientist Carol Woodward as a 2021 fellow, recognizing her

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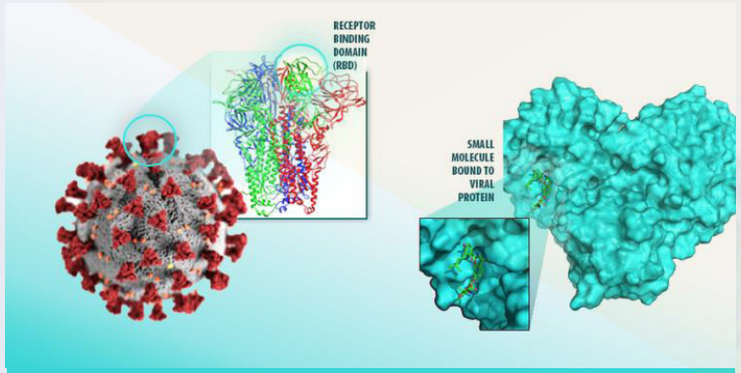

Using Sierra, the world's third fastest supercomputer, LLNL scientists produce a more accurate and efficient generative model to enable COVID-19 researchers to produce novel compounds that could possibly treat the disease. The team trained the model on an unprecedented 1.6 billion small molecule compounds and 1 million additional promising compounds for COVID-19, reducing the model training time from one day to just 23 minutes.

'Being selected as a fellow of the AWM is special to me. Promoting the amazing work that women do in mathematics, as well as encouraging equal treatment for women, have been causes I strongly support and have worked hard to develop. The AWM does so much amazing work in support of women and girls in mathematics. I find it a humbling honor to be recognized by them.'

– Computational scientist Carol Woodward

commitment to supporting and advancing women in the mathematical sciences.
Read more

LLNL welcomes future military leaders from Reserve Officers' Training Corps detachments across the U.S. for the Lab's annual ROTC Day.
Read more

The Veterans/Military Outreach and Recruiting Program at Lawrence Livermore launches a new external website on Veterans Day to exemplify the Laboratory's commitment to veterans and armed forces service members.
Read more

Two teams of Lawrence Livermore scientists and engineers, each supported by a Lab business development executive, garner regional awards for technology transfer.
Read more

A team of current and former Lawrence Livermore and IBM scientists win the annual "Test of Time" award at the 2020 Supercomputing Conference for a paper outlining LLNL's Blue Gene/L supercomputer.
Read more

NASA's Exobiology Program awards LLNL senior scientist Nir Goldman a three-year grant to research meteorite impacts on Earth. Goldman is seeking to understand the role of the mineral schreibersite as one possible source of phosphorylated prebiotic organics.
Read more

Director Bill Goldstein holds a virtual all-hands meeting, thanking employees for their continued "resilience and commitment" during the COVID-19 crisis and notes recent accomplishments indicating productivity remains strong despite the pandemic. He emphasizes the Lab and its employees "can't afford to relax precautions," especially as many prepare for holiday travel.
Read more

In honor of National Native American Heritage Month, the American Indian Activity Group and the Office of Strategic Diversity and Inclusion Programs host a special Webex event, "Native American Tribes' Response to COVID-19."
Read more

The Global Security Principal Directorate holds an all-hands and its biannual Gold Awards ceremony to recognize outstanding contributions and onetime achievements that are above and beyond the demands of normal job performance.
Read more

The Department of Energy announces that Lisa Gorgon-Hagerty resigns as administrator of the National Nuclear Security Administration (NNSA) and under secretary of Energy for Nuclear Security. Gordon-Hagerty was confirmed by the U.S. Senate Feb. 15, 2018 and was the first woman to hold that position.
Read more

The Department of Energy's Hydrogen and Fuel Cell Technology Office selects Brandon Wood and Tadashi Ogitsu for the 2020 Technical Program Area Award in Hydrogen Fuel R&D.
Read more

Cynthia Rivera is named Lawrence Livermore 's principal associate director for Operations & Business.
Read more

Fifty-seven researchers from Lawrence Livermore National Laboratory are among the top 2 percent of the most cited researchers worldwide throughout their careers, according to research on metascience by Stanford University.
Read more

COMMUNITY CONNECTION: DONATING TO OTHERS IN A TIME OF NEED

The COVID-19 pandemic has had a devastating impact on many industries, leading to record unemployment and financial struggles for millions in the U.S. Like the rest of the country, the Bay Area has felt the pandemic's impact, and LLNL employees have stepped forward to try to provide assistance to those in need.

Since 1971, the Laboratory has hosted the Helping Others More Effectively (HOME) Campaign, an employee charitable giving drive. The annual campaign, now in its 46th year, has a significant impact on the community and currently benefits more than 1,500 charities. In 2020, the HOME Campaign raised more than $3.9 million.

Since 1989, LLNL employees have generously donated gifts and food to local families in need through the Brighter Holidays program. This year, the program was coordinated by the Lawrence Livermore Employee Services Association, and focused on supporting the Children's Emergency Food Bank of Dublin.

In addition, employee-driven campaigns provided support and donations to programs such as Adopt-a-Senior, Adopt-a-Foster-Child and Tri-Valley Haven. Members of the Piecemakers Networking Group contributed quilts and knit/crocheted hats and blankets to the Children's Hospital in Oakland and Tri-Valley Haven in Livermore.

Lab Director Emeritus John Nuckolls, widely considered the "father of inertial confinement fusion" and winner of the E.O. Lawrence Award, the James Clerk Maxwell Prize for Plasma Physics and the Edward Teller Award, celebrates his 90th birthday.
Read more

OPERATIONS

In response to the rising case rates of COVID-19 across the state, the California Department of Public Health issues a limited stay at home order for all counties in Tier 1 of California's Blueprint for a Safer Economy. This includes the counties where the majority of LLNL's employees reside – Alameda, Contra Costa and San Joaquin. On-site work at LLNL continues.
Read more

LABI Lookups are available in the LABI app on LLNL iPhones. With this change, LABI Lookups can be accessed on the web as well as both LLNL iPhones and iPads.
Read more

The Laboratory offers a free personalized face covering to any LLNS employee or contractor who wishes to order one. The masks are provided by Lawrence Livermore National Security, LLC and are free of charge. No government funds are used.
Read more

The 2020 Helping Others More Effectively (HOME) Campaign officially surpasses the $1 million mark.
Read more

As the 2021 fiscal year begins, the National Nuclear Security Administration's Office of Defense Programs releases the FY21 "Getting the Job Done List". This

By looking at satellite measurements of temperature changes in the lower layer of Earth's atmosphere, LLNL scientists find that climate models may have overestimated the decade-to-decade natural variability of temperature.

'Our findings enhance confidence in previous claims of detectable human-caused warming of the troposphere and imply that these claims may be conservative.'

– Statistician Giuliana Pallotta

list lays out 16 key priorities for the year ahead, organized into four categories: Stockpile Sustainment; Science, Technology and Engineering; Stockpile Production; and Operations, Workforce and Infrastructure.
Read more

SmartRecruiters replaces the current applicant tracking system, LHire. SmartRecruiters improves the hiring process and collaborations between hiring managers, candidates and the Talent Acquisition Division.
Read more

All LLNL Webex meetings are now hosted at llnlfed.webex.com, a more secure Webex service that has FedRAMP authorization. The commercial Webex site at llnl.webex.com is retired and inaccessible.
Read more

As part of Lawrence Livermore's 10-year infrastructure investment project, the glovebox room in Bldg. 151, which supports research for the Global Security, National Ignition Facility & Photon Science, Physical & Life Sciences and Weapons & Complex Integration directorates, receives a $7 million remodel.
Read more

A multi-year campaign allows for the disposal of highly radioactive transuranic from the Laboratory site for the first time in a decade.
Read more

The COVID-19 hotline receives an increasing number of calls regarding Protective Force Officers and their requests for employees to lower their masks temporarily upon entering the Lab. While face coverings must be worn on site, employees are reminded that they must lower their masks temporarily when proceeding through the entry gates, so Protective Force officers can match faces with badges.
Read more

Twenty-five high school students are introduced to the world of high performance computing in the first-ever virtual Girls Who Code – "Big" program, a full-scale collaboration between Lawrence Livermore, the Livermore Lab Foundation and the Livermore Valley Joint Unified School District.
Read more

The Open Campus space at the Lab welcomes new office and conference space.
Read more

The 32nd edition of the annual International Conference for High Performance Computing, Networking, Storage and Analysis is unlike any other. The first all-virtual affair in the conference's history — due to the ongoing COVID-19 pandemic — stretches over two weeks, dominated by prerecorded and livestreamed presentations, talks and awards ceremonies.
Read more

When the organizers of a new educational outreach between LLNL and the Air Force Institute of Technology considered how many employees might enroll this fall, they hoped for about 10. But instead, the program sees more than 30 employees apply for educational courses and ends up with 19 participants.
Read more

DECEMBER 2020

SCIENCE AND TECHNOLOGY

Lawrence Livermore researchers take a promising step in improving the reliability of laser-based metal 3D printing

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From left: Livermore Mayor John Marchand, NNSA Livermore Field Office Deputy Manager Pete Rodrick and Lab Director Bill Goldstein break ground for Livermorium Park.

'I have enjoyed the wonderful collaboration between the city and our laboratories immensely over these last nine years. This park represents our most recent and ongoing partnership.'

– Livermore Mayor John Marchand

techniques by measuring the emission of electrons from the surface of stainless steel during laser processing.
Read more

A team of LLNL scientists simulate the droplet ejection process in an emerging metal 3D printing technique called "Liquid Metal Jetting," a critical aspect to the continued advancement of liquid metal printing technologies.
Read more

The 34th Conference on Neural Information Processing Systems features two papers advancing the reliability of deep learning for mission-critical applications at Lawrence Livermore.
Read more

Lawrence Livermore scientists produce hydrodynamic simulations of laser-driven microjetting from micron-scale grooves on a tin surface. From these simulations, they are able to see microjet formation across a range of shock strengths, from drives that leave the target solid after release to drives that induce shock melting in the target.
Read more

By looking at satellite measurements of temperature changes in the lower layer of Earth's atmosphere, LLNL scientists find that climate models may have overestimated the decade-to-decade natural variability of temperature.
Read more

Georgetown University, Lawrence Livermore National Laboratory scientists and collaborators identify a protein that when removed from the body may help pancreatic cancer patients live longer.
Read more

A Lab analysis reveals forensic signatures of nuclear material during an international smuggling exercise.
Read more

When it comes to the semiconductor industry, silicon has reigned as king in the electronics field, but it is coming to the end of its physical limits. To more effectively power the electrical grid, locomotives and even electric cars, Lawrence Livermore scientists turn to diamond as an ultra-wide bandgap semiconductor.
Read more

To help solve this problem of manually having label molecular crystal's packing motif, a team of Lawrence Livermore materials and computer scientists develop a freely available package, Autopack, which formalizes the packing motif labeling process and can automatically process and label the packing motifs of thousands of molecular crystal structures.
Read more

PEOPLE

Sydney Barber, former intern at Lawrence Livermore, makes history at the U.S. Naval Academy. The 1st class midshipman Barber will become brigade commander next semester, the highest leadership position in the brigade, making her the first Black woman to be named in the role.
Read more

Glenn Fox, associate director of Physical & Life Sciences, discusses a flexible and supportive work environment as part of the Senior Management's team series of commitments to complement the Lab's values.
Read more

Lawrence Livermore is selected as a pilot site for the American Physical Society's new Chapters Program. Chapters are intended to be grassroots organizations that promote the success of early-career physicists (undergraduate/graduate students, postdocs and scientists who earned their final degree less than five years ago).
Read more

Offering thanks to Lab employees for the year's work and sharing his holiday traditions, as did other senior managers, Director Bill Goldstein holds his annual holiday celebration. This year's event had a familiar 2020 twist, with festivities held virtually due to the COVID-19 pandemic.

'The connections made, even in the virtual environment, are critical for building networks and moving Lab technologies from experiment to real world products, where the impact of research can be amplified. We are continuing to field requests for introductions spurred by the presentations.'

– Hannah Farquar,
of the Lab's Innovation and Partnerships Office

Alexus "Lexi" Warchock turns her successful internship into a part-time job at Lawrence Livermore National Laboratory through May 2021 while she continues pursuing a dual major in bioengineering and mechanical engineering at UM-Dearborn.
Read more

IEEE, the world's largest technical professional organization, elevates Bronis de Supinski to the rank of fellow, recognizing Lawrence Livermore National Laboratory's Livermore Computing's chief technology officer (CTO) for his leadership in the design and use of large-scale computing systems.
Read more

Former intern Jake Tibbets from LLNL's Center for Global Security Research is named the recipient of the 2020 Leonard Rieser Award from the Bulletin of the Atomic Scientists. He wins the honor for a "Voices of Tomorrow" essay he wrote for the *Bulletin.*
Read more

LLNL physicist Kelli Humbird wins Texas A&M University's Department of Nuclear Engineering 2020-21 Young Former Student for her work at LLNL in combining machine learning with inertial confinement fusion research.
Read more

The Livermore Lab Foundation, in partnership with the University of California, Merced, award two rising seniors, Jose Garcia-Esparza and Teagan Zuniga, one-year $15,000 fellowships to participate in the Lab's Data Science Summer Institute and continue a part-time fellowship at the Lab for the remainder of the 2020-21 school year.
Read more

Lawrence Livermore scientists and engineers put together another first-rate year by securing five major commercialization grants through the Department of Energy's Technology Commercialization Fund.
Read more

OPERATIONS

Moving a few shovelfuls closer to reality, Livermore Mayor John Marchand and Lawrence Livermore Director Bill Goldstein break ground on Livermorium Park. When completed, the park will pay perpetual tribute to the Lab's work on element 116, Livermorium. Coincidentally, the park is located at 116 S. Livermore Ave., in the heart of the Livermore Plaza.
Read more

In response to increasing COVID-19 cases and hospitalizations in the state, the California Department of Public Health issues a regional stay at home order based on intensive care unit bed capacity.
Read more

As the COVID-19 pandemic continues, the Laboratory extends its blanket telecommuting agreement through the end of March 2021. The extension is a precaution to protect the health and safety of the workforce and ensure mission critical work can continue at the Lab. Employees who are not called back to the main Lab site or Site 300 may continue to work from home.
Read more

Bldg. 280, also known as the Livermore Pool Type Reactor, will be demolished in the spring.
Read more

The health and safety of the workforce continues to be the Laboratory's top priority. To help safeguard employees against COVID-19 in the workplace, the Laboratory introduces limited on-site testing of select employees for the virus.
Read more

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Kelli Humbird, a design physicist at Livermore National Laboratory, wins the 2020-21 Young Former Student award from Texas A&M University's Nuclear Engineering Department for her work at LLNL in combining machine learning with inertial confinement fusion research.

'I am grateful to LLNL, Livermore Computing and my colleagues for their essential contributions to the research and system development that are the hallmark of my achievements. These achievements have enabled me to reach a goal that I set for myself many years ago — to be a world-leading computer scientist. This honor is evidence that LLNL fosters an environment where truly meaningful impact can be made.'

– Scientist Bronis de Supinski, on earning the prestigious IEEE Fellowship

The latest edition of *SpotLight*, a look at the people who make up Lawrence Livermore National Laboratory, features employees who have hobbies that go well beyond their day jobs.
Read more

Lawrence Livermore National Security, LLC, the contract manager for the Lab, announces the recipients for the 2020 LLNS Community Gift Program. These gifts, totaling $150,000, reflect LLNS' commitment to local communities.
Read more

Lawrence Livermore employees, along with Lawrence Livermore National Security, LLC, donate more than $3.9 million to charitable organizations via the annual employee giving program, the Helping Others More Effectively (HOME) Campaign. This is the highest dollar amount raised in the 45-year history of the HOME Campaign.
Read more

Though the House and Senate have agreed on a one-week Continuing Resolution that will extend the Dec. 11 deadline to Dec. 18, the stopgap measure still awaits signature from the president.
Read more

On Dec. 15, a revised DOE Order, 486.1A, goes into effect across the DOE complex. This order is a major revision of its predecessor, 486.1, which was implemented in 2019 to curtail the practice by foreign entities of targeting U.S.-funded basic research and technology for international economic and national security advantages.
Read more

The annual salary review process kicks off Dec. 10 with a manager's forum and will continue through Jan. 19.
Read more

Researchers from 10 national labs come together for a virtual showcase of Department of Energy innovation when scientists pitch their business model ideas to seasoned investors and compete for a $25,000 prize for work to advance commercialization.
Read more

Environment, Saftey & Health plans to implement newly created Integrated Safety Teams (IST) to support the LLNL directorates. ISTs will be matrixed to each directorate with the goal to become fully integrated partners with our customers to support mission success, and to create a sense of shared fate.
Read more

Offering thanks to Laboratory employees for the year's work and sharing his holiday traditions, as did other senior managers, Director Bill Goldstein holds his annual holiday celebration. This year's event had a familiar 2020 twist, with festivities held virtually due to the COVID-19 pandemic.
Read more

As the COVID-19 pandemic continues to evolve, the Laboratory's top priority continues to be protecting the health and safety of the workforce. LLNL has developed a training course on the Laboratory's safety protocols — "Working Safely at LLNL During The COVID-19 Pandemic (HS4440-W)." This course is required for all Lab employees working at the main site or Site 300. Those telecommuting also may take the course. Ultimately, it will be required for all personnel returning to work at the Laboratory.
Read more

This issue of *Newsline* was produced by the Public Affairs Office.

It represents a sample of the science and technology, people and operations highlights of the year. It is available on the LLNL website.

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